

SPECIFICATION AMENDMENTS

Before the paragraph beginning at page 1, line 1, insert as a heading:

Field of the Invention

Replace the paragraph beginning at page 1, line 1 with:

The invention concerns a swivel joint system ~~designed to be mounted in~~ for a cryogenic liquid transfer line, such as a liquefied natural gas line, and for the return of cold gas associated with the cryogenic liquid transfer, ~~of the type~~ comprising a swivel joint device for the passage of the cryogenic liquid and a swivel joint device for the return of the cold gas, each device comprising a conduit provided with a fixed conduit portion and a rotating conduit portion rotating relative to the fixed conduit portion and a rotational guiding means interposed between the two conduit portions.

Before the paragraph beginning at page 1, line 8, insert as a heading:

Background

Replace the paragraph beginning at page 1, line 8 with:

A system of this type is known from European Patent No. 0188161. In this system, the two swivel joint devices for the passage of the cryogenic liquid and the return of the gas ~~are realized in the form of~~ independent devices, the conduit intended for the passage of the return of the gas concentrically surrounding the fixed conduit portion of the joint device for passage of the cryogenic liquid, with a layer of thermal insulation interposed between the two concentric conduits.

Before the paragraph beginning at page 1, line 16, insert as a heading:

Summary of the Invention

Replace the paragraph beginning at page 1, line 16 with:

The present invention aims to offer a swivel joint system which ~~palliates~~ mitigates this disadvantage.

Replace the paragraph beginning at page 1, line 18 with:

To realize this aim, in the swivel joint system according to the invention ~~is characterized by the fact that,~~ the swivel joint device for passage of the return of the gas is integrated in the swivel joint device for passage of the cryogenic liquid, and ~~by the fact that it comprises~~ one and the same rotational guiding device is used for the two devices.

Before the paragraph beginning at page 1, line 22, insert as a heading:

Brief Description of Drawings

Before the paragraph beginning at page 2, line 5, insert as a heading:

Detailed Description

Replace the paragraph beginning at page 2, line 5 with:

Figure 1 illustrates, as an example of the application of the invention, the use of a swivel joint system according to the invention in an offshore station for the transfer of liquefied natural gas from a ship moored to this station and a storage station ~~away~~ located remotely from the offshore station.

Replace the paragraph beginning at page 2, line 26 with:

Central conduit 12 has lower conduit section 12a, which is fixedly mounted ~~fixed~~ inside of the column and upper section 12b, which is mounted ~~so as~~ to rotate with respect to fixed lower section 12b. Provided between the two end surfaces 20 and 21, respectively facing each other, of fixed section 12a and rotary section 12b, is an appropriate seal 23 which allows extensive relative annular movement of the two sections 12a and 12b. Provided around central conduit 12, coaxially to this conduit, is annular

space 25, which is delimited radially inside by central conduit 12 and radially outside by wall 29. Wall 29 extends between the two flanges 13a, 13b. Space 25, which is therefore closed at the top and bottom, constitutes the gas return conduit, which enters space 25 through lateral entrance joining piece 27 and leaves this space through lateral exit joining piece 29.

Replace the paragraph beginning at page 3, line 12 with:

The two seals 23 and 37, respectively belonging to central conduit 12 for passage of the liquefied natural gas and to gas return conduit 25, are in parallel, but axially offset, planes. The assembly formed by central conduit 12 and wall 29 coaxially surrounding it, forming conduit space 25, is surrounded by exterior jacket 39, which extends coaxially between the ~~two~~ upper 13b and lower 13a flanges and is divided into two portions, fixed lower portion 39a and rotary upper portion 39b. Free ends 41, 42 facing one another, in the form of flanges, of jacket 39 bear a rotational guiding device in the form of a roller orientation ring, such as rotational bearing 44 which is arranged, for example, in plane P2 of seal 37 of gas return conduit space 25. The rolling bearing, which forms a mechanical guiding device for the two parts of joint system A, can be of any known and appropriate nature, for example, ball bearings or a roller bearing. These rotational components are arranged between bearing part 45, attached by screws 46 at end 41, in the form of a flange, of fixed lower jacket portion 39a, and part 48 is held by screws 49 at free end 42 of rotary upper jacket portion 39b.

Replace the paragraph beginning at page 3, line 26 with:

As seen in Figure 2, jacket portions 39a and 39b extend from the lower and upper flanges of the joint system to plane P2, while they diverge from respective wall portions 29a and 29b. Thus, annular space 50 is delimited between wall 29 and jacket 39, which has lower portion 50a and upper portion 50b, depending on whether one is in the fixed part or the rotating part of the joint. Each partial space 50a and 50b is filled, for example, with a block of thermally insulating material 52a, 52b, the two sides of the blocks facing one another ~~of the two blocks~~ being suitable for sliding over one another during angular movement of the part of the joint that moves with respect to the fixed part. The sides in contact have a stepped profile.

Replace the paragraph beginning at page 4, line 4 with:

As seen in the figures, the single rotational bearing ~~which equips~~ of the swivel joint system according to the invention is on the exterior periphery and can therefore operate at a temperature close to ambient temperature, and, therefore, a non-cryogenic temperature.

Replace the paragraph beginning at page 4, line 8 with:

Seals 23, 37 are configured so that they are able to absorb extensive radial and axial movements and can be produced in the manner represented in Figure 5. The seal represented as an example has two rings 54, 55 made of an appropriate material such as ~~Teflon~~ polytetrafluoroethylene, for example, each of which is received in groove 57, 58 ~~made~~ in front surface 21 of central conduit section 12b. Grooves 57, 58 are concentric. Each sealing ring 54, 55, on its side facing front surface 20 of central conduit section 12a, comprises projecting portion 60 whose front surface is squeezed between surface 20 under the effect of spring 63 inserted between rear surface 65 of the ring and bottom 67 of groove 57, 58 for receiving the sealing ring.